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ABSTRACT

This paper describes two studies to determine the effectiveness of a technique for teaching graphemic bases in linguistic patterns and for teaching the combining of these graphemic bases with beginning sounds. Designed to complement the Hawaii English Program, the teaching procedure used both group instruction and peer interaction-it was brief, incorporated materials apparently of high interest for children, and was easy to install. Using first-grade and second-grade children, the first study provided no evidence that the group learned to generalize either graphemic bases or the process of blending beginning sounds and graphemic bases to make a word. The teacher and consultants, however, felt that the students were learning. The study was repeated with the same subjects, preceeded by additional teaching. Results were similar to those of the first study but suggested that the method used for teaching graphemic bases can be effective in teaching sight words to students. Since only three of the six children learned to decode new words of the same or similar graphemic base, the methods can be considered only partially successful. (HOD)

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Working Paper

Development of a Procedure to Teach Graphemic Bases as Part of a Consultation in Reading

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As part of an on-going consultation relationship with a small, rural neighbor island school, teachers were trained in the use of a procedure to teach consonant sounds to kindergarten children (see Technical Report #51). This earlier study had been designed in response to the teachers' expressed need for a technique of teaching letter sounds to students having trouble in the early stages of the Hawaii English Program (HEP). The procedure was reasonably successful. After six weeks of 15-minute daily group sessions, the students knew about 11 of the 15 letter sounds which had been taught.

The teachers involved were pleased with the results, but it was clear that knowledge of the sounds was only an initial step toward assisting the students in achieving success in HEP. The teachers and consultants then decided that a next logical step would be a technique for teaching graphemic bases in linguistic patterns and combining these graphemic bases with beginning sounds. The consultants agreed to develop such a procedure for trial purposes.

It was felt that the program should be affected by the following considerations:

1. As it was neither desirable nor possible to change the basic HEP curriculum, a teaching technique was needed that would add to the existing program but not interfere with it.

2. In the teacher's regular language program, very little formal teaching was done. This independent learning situation seemed to work very

CS 003 411

well for some students, but not for children who lacked skills such as self-discipline, self-motivation, or generalization. It was felf by both the consultants and the teachers involved that these children might do better if they were actually instructed systematically on the task.

3. The instruction period could take no more than 10-15 minutes to prevent interference with HEP, and to allow the teacher to supervise other students.

4. Since peer interaction and peer tutoring are an essential part of HEP, it was thought desirable to incorporate this technique as part of the learning process.

Development of Procedure

A common problem for the students who were moving slowly in the initial parts of HEP seemed to be that they were not "getting the idea." The early "stacks" of flashcards in HEP contain words from a relatively small number of graphemic bases. The student encounters words of the CVC type, and the task is to recognize that many of the words differ only in their initial consonant. This is never explicitly stated, however, and many of the students do not seem to recognize the patterns. Therefore it was decided to use a teaching procedure which did point out these patterns.

The consultants developed a teaching procedure within the constraints mentioned above. It used both group instruction and peer interaction, was brief, incorporated materials of seemingly high interest for the children, and was easy to install.

Study Trial

Before the study was instituted in the consultation school, a two-day trial was held using first-grade students at the

Kamehameha Early Education Program (KEEP). Six students who knew consonant phoneme-grapheme correspondences but were judged by their teacher as knowing few sight words took part in the trial.

The study trial procedure was exactly the same as the first two days of the procedure described below for Study 1.

The subjects were given a pretest immediately before the first session, and a posttest immediately after the second session. Results of these tests are given in Table 1.

Performance improved from pretest to posttest on recall and on both generalization measures (see Testing section below for details of these tests), although the results of the Generalization 2 test suggest it was an inadequate measure. It was decided to use the procedure at the consultees' school to see if it worked equally well there.

Study 1

Method

Subjects

The teachers selected the first and second grade students who were achieving far below expected levels in HEP. Included were five first grade students and one second grade student who were on RWC-1, -2 or -3 or PC-2. There were three boys and three girls.

Materials

The three graphemic bases used for level 1 of this study (at, an, ad) were those that the students would study or, in some cases, had already studied, in RWC-1 of HEP.

The materials used were:

1. Three large laminated cards. Each had a graphemic base at the top (e.g., -at), followed by words containing the base (e.g., bat, rat, fat). Each card had words of only one graphemic base.

Table 1

Trial Results

Student	Recall (Total=3)		Gen. #1 (Total=3)		Gen. #2 (Total=9)	
	Pre	Post	Pre	Post	Pre	Post
#1	2	2	0	2	3	5
#2	3	3	2	2	5	8
#3	0	3	0	2	9	9
#4	1	3	2	3	8	8
#5	0	2	0	3	8	6
#6	3	2	1	2	8	8
Total	9	15	5	14	41	44

2. Laminated wheels, on which the head of a popular television hero had been drawn and painted. The right eye had a graphemic base (for example, -at, -an, or -ad) permanently written on it. The left eye had a movable wheel behind it with consonants written on it, so that only one at a time appeared as the wheel was moved. Students were to combine the consonant shown with the graphemic base and say the word (for example, b-at).

3. Laminated games consisting of a small game board, a spinner, markers, and word cards with words of a single graphemic base, either -at, -an, or -ad. The game board was made up of a path of green and orange circles on an 8" X 12" piece of cardboard. The students' markers were placed on "Go" and the students took turns spinning the spinner to determine whether they could move 1, 2, 3, or 4 circles down the path. If the student landed on a green circle, it then became the next student's turn. If the student landed on an orange circle, he would take a card from the top of the card stack. If he could read the word on the card he was allowed to keep his marker on that circle. If he was unable to read the word, he had to go back to "Go." Rules for going back were varied at times by the teacher.

Procedure

Training was divided into two parts: a small group lesson conducted by the teacher and independent activities for pairs of students supervised by the teachers. There was one 15-20 minute session a day for seven days.

Group Lesson. The group lesson began with the children seated on the floor in a semi-circle facing the teacher.

1. The teacher showed the group the large laminated list of words, all of which had the same graphemic base (e.g., -at).

2. The teacher asked students, "What is the same about all of these words?" She let children respond and reinforced correct responses.

3. The teacher said, "That's right, all of these words do end with the letters "- a t".

4. The teacher called students up one at a time to circle the "at" in one of the words. She called on "good listeners" and "watchers" first.

5. The teacher again called attention to the graphemic base and gave the sound of the base.

6. The teacher drew attention to the initial consonant, and asked students for its sound.

7. The teacher combined the sounds in the word for the student as she pointed to the appropriate letters (for example, m - at). Only the initial consonant sound and the graphemic base sound were separated.

8. The teacher encouraged the children to sound out the words with her.

9. The sounding process was faded as soon as possible and a rhyming technique substituted.

10. Everyone read the list together.

11. The teacher called on individual children to read one word each.

12. She called on individuals to read two or three words from the list or perhaps the whole list depending on how well the students were progressing.

After the group lesson, the children worked with the "wheels"

and games in pairs.

Daily lesson schedule.

Session 1.

a. group lesson using -at laminated list.

b. Paired students practiced on -at words by using the wheels. The students took turns being tutor and tutee so both played both roles.

Session 2.

a. group lesson using -at laminated list.

b. Teacher introduced -at game and showed children how to play. They played in twos or threes under her supervision.

Session 3.

a. group lesson using -an laminated list.

b. Students in pairs practiced on -an words using laminated wheels.

Session 4.

a. review of group lesson using -an laminated list.

b. Students played -an game (same technique as -at game).

Session 5.

a. group lesson using -ad laminated list.

b. Students in pairs practiced on -ad words using laminated wheels.

Session 6.

a. review group lesson using -ad laminated list.

b. Students played -ad game.

Session 7.

a. group lesson reviewing all three graphemic bases, using all three laminated lists.

b. Students practiced all three graphemic bases by using all the wheels and all the games.

Testing

Preliminary testing. Each of the 27 items was a one syllable word of the CVC pattern, presented on individual cards and administered to the subjects individually.

There were three components to the test. Section 1 (nine items) tested recall of actual words taught in the study.

Section 2 (Generalization #1, nine items) contained the same three linguistic patterns (graphemic bases) but with beginning sounds that were not presented to the students during the study. This was to test whether or not the students generalized linguistic patterns to new words.

Section 3 (Generalization #2) contained nine items, three each for three graphemic bases that the students had not encountered in the study. In this section, the sound of the graphemic base was given by the tester, then the subject was asked to read three words with that same graphemic base. This section was to test whether the subjects had generalized the concept of combining a beginning sound (which they should already know) with a new graphemic base to make a word.

Posttesting

The same test instrument was also used for posttesting. The order of items within each of the three sections was randomly changed, but the order of the sections was unchanged. The posttest was individually administered two days after the last session of the study by the consultant.

Results

The study began with seven subjects. One of the seven missed most

of the training sessions and one missed the first two training sessions and was absent for the posttest. Therefore, results are presented only for the five subjects present for pretest, posttest, and all study sessions.

Table 2 shows that after seven 15-minute sessions there was an improvement in the group scores on all three sections of the posttest.

For the recall section of the test, the pretest mean was .80 and the posttest mean was 5.20 (t=4.272, $p < .02$).

On the second section of the test, Generalization #1, the group mean increased from 0.00 to 3.00 (t=2.37, $p < .10$).

Scores on the second generalization measure increased from a pretest mean of 0.40 words to a posttest mean of 2.80 words. This change was not significant.

Discussion

Although the group mean increased on all three sections of the test, only the change on the recall of actual words taught during the study reached a conventional level of significance. This suggests that the main effect of the procedure used in the study was an increase in sight vocabulary.

There was no evidence that the group learned to generalize either graphemic bases or the process of blending beginning sounds and graphemic bases to make a word. Two subjects did show evidence of generalizing on both the graphemic base and the process. However, the other three students achieved only one out of nine on the Generalization #1 posttest and zero out of nine on Generalization #2.

Despite the "hard data," the teachers and consultants felt that the students in the study were learning based on the following observations:

1. All children improved on the recall section of the test.

Table 2

Study 1 Results on Pretest and Posttest

Subject	Recall		Gen. #1		Gen. #2	
	Pre	Post	Pre	Post	Pre	Post
#1	0	7	0	5	1	5
#2	0	4	0	1	0	0
#3	0	1	0	1	0	0
#4	0	6	o	1	0	0
#5	4	3	0	7	1	9
Total	4	26	0	15	2	14
Gr. Mean	.80	5.20	0	3.0	.40	2.80

2. The students who had poorer scores on the posttest gave answers that showed some learning was taking place (for example, bad for sad, mad for mat, fat for fan). The consultant concluded that the time needed to learn to make these generalizations had been underestimated.

3. The study teacher felt that some of the students did not know the phoneme-grapheme correspondences well enough. On posttest #1 there were 144 attempts made to read 162 words. Of these 144 attempts, the subjects got 120 of the beginning sounds correct. In other words, the children got 83% of the beginning sounds correct on the posttest.

Study 2

It was decided to repeat the study with the same subjects, but to first include additional teaching.

1. The 15 phoneme-grapheme correspondences taught the previous year were reviewed and 5 new ones were taught (y, z, q, v, k).

2. Subjects were specifically taught to distinguish the beginning sound in a word.

Subjects

The subjects were the same six subjects as those in Study 1.

Materials

In addition to the materials that were used in Study 1, there were 21 5" X 8" cards on which the consonants were printed, one on each card.

Procedure

The new study was divided into three components. The first component was a review of the phoneme-grapheme correspondences. The second component consisted of teaching discrimination of the beginning consonant sound. The procedure for Study 1 was replicated as the third component of Study 2 except more sessions were added.

Component 1. A test given a month previously was used to make a list of those phoneme-grapheme correspondences each child did not know. This list was used by the teacher to determine which letters would need teaching and which would only need a review. Table 3 shows the correspondences taught and how many of the seven students knew them before Component 1 was begun.

All instruction was done in small groups, as follows:

1. Using the consonant letter cards, four at a time, the teacher introduced all four symbols to the whole group. The whole group responded.

2. The teacher called on individual children, going through the set of cards several times so all had a chance to respond to each symbol.

3. If a child said the correct sound when he was called upon, the teacher said something like, "Good, that is an 'm'" (sound, not letter name).

4. If the child gave an incorrect answer, the teacher said, "No, that's an 'm'" (sound).

The repeating of the sound was thought to be an important part of the technique.

5. As letters were learned by the group, the teacher discontinued teaching them and replaced them with new letters so that the students were each day working with four letters. Some letter sounds which seemed to be more difficult for the children to learn were consequently taught more days than other letter sounds.

6. Each day, the teacher reviewed any discontinued letters at the beginning of the session. When all consonant sounds were finished, the teacher began Component 2.

Ten sessions were needed to complete this component.

Table 3

Students Knowing Each Phoneme-Grapheme Correspondence

at the Beginning of Study 1

P-G Correspondence	# of Students	P-G Correspondence	# of Students
b	2	n	4
c	4	p	4
d	2	q	0
f	5	r	7
g	1	s	7
h	3	t	6
j	5	v	6
k	7	w	0
l	2	y	0
m	4	z	5

Component 2. This component involved learning to discriminate initial consonant sounds. This was also a teacher-directed small group teaching situation.

The teacher placed five cards with consonants written on them on the table face up toward the subjects.

She then called on a child to "pick up the card whose sound you hear first in the word 'mat'," for instance.

If the student picked up the correct card, the teacher said, "yes, that's right! The first sound you hear in mat is 'm'" (the sound).

The teacher then wrote the word on the blackboard and pointed out that indeed not only did they hear the "m" (sound) first when they heard the word "mat" but also they saw the "m" (letter) when they looked at the word "mat."

If a child's answer was incorrect, the teacher said "No, the first sound you hear in mat is 'm'" (sound). As she said this the teacher picked up the "m" card.

This component was completed in six teaching sessions.

Component 3. This component was a duplication of the procedure for Study 1, except there were 10 sessions rather than seven.

Testing

There was no pretest given. The posttest for Study 1 was the pretest for Study 2.

The posttest (Posttest 2) was made up of the same 27 items as those on the pretest and posttest 1, administered in a different order.

Results

Results of the pretest and both posttests are shown in Table 4 and Figure 1.

Table 4

Pretest and Posttest Scores for Study 1 and Study 2

Student	Recal			Gen. #1			Gen. #2		
	Pre	Post #1	Post #2	Pre	Post #1	Post #2	Pre	Post #1	Post #2
S1	0	7	9	0	5	6	1	5	8
S2	0	4	3	0	1	1	0	0	1
S3	0	1	6	0	1	0	0	0	1
S4	0	6	9	0	1	0	0	0	0
S5	4	8	9	0	7	9	1	9	9
S6	0	0	8	0	0	6	0	2	5
Total	4	26	49	0	15	22	2	14	24
$\bar{X}$	.80	5.20	8.17	0	3.0	3.67	.40	2.80	4.0

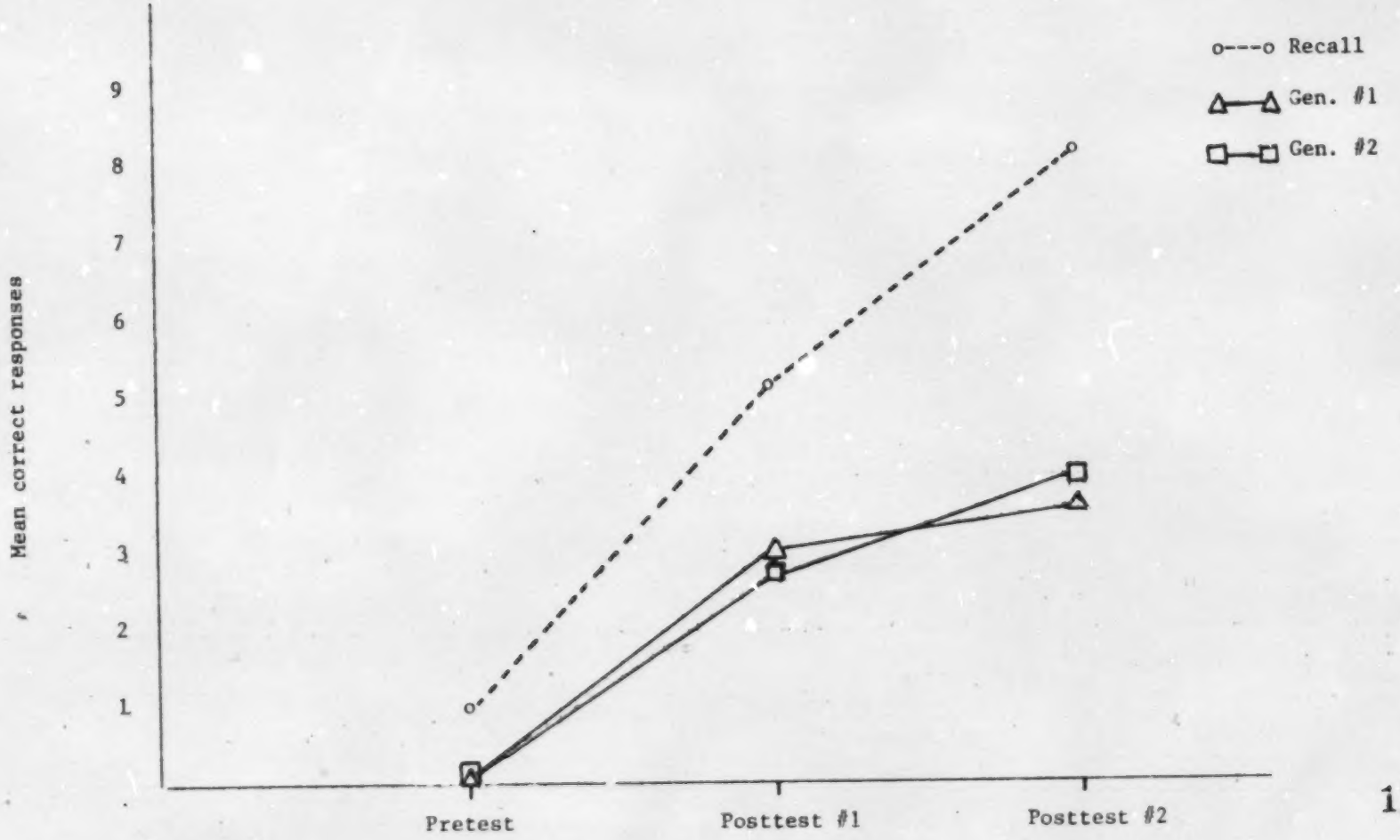

Figure 1. Mean correct responses for subtests on the pre- and posttests

Six subjects improved in recall on both posttests. As noted in the results of Study 1, the change between the scores on the pretest and posttest #1 was significant. The change between the first (Study 1) and second (Study 2) posttests was also significant (t=3.781, $p < .02$). The difference between the pretest and posttest #2 was highly significant (t=10.984, $p < .001$).

For the second section of the test, Generalization #1, there was an increase in the scores of three subjects, but no significant difference among the group scores.

As in Study 1, only three of the six children showed an increase in their scores on Generalization #2. Only the group means between the pretest and posttest #2 were significant (t=2.610, $p < .05$).

Discussion

The results suggest that the method used for teaching graphemic bases can be effective in teaching sight words to students.

The study was not designed to compare this method with another method. Instead, it was developed to meet a need of teachers in a specific classroom with specified children. These children had not previously learned these words, although five of the six students had already studied them as a part of their HEP program using a sight word process. To meet the need of these teachers the procedure seems to have been effective after 17 15-minute sessions. The subjects went from a mean of .80 on the pretest to a mean of 8.17 on the last posttest.

However, the goal had been to develop a method that would teach the students to decode new words of the same or similar graphemic base.

This was attained with only three of the six children, so the method can be considered only partially successful.